

## ADDITIONAL NOTES ON THE GENUS PETREA. VII

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Since the publication of my monograph of this genus in 1938 and its subsequent six supplements much additional information has come to light and many additional specimens have been examined, necessitating the present seventh supplement. Explanation of the herbarium acronyms employed will be found in my Fifth Summ. 2: 795—801 (1971).

PETREA Houst. ex L., Hort. Cliff. 319. 1739; Sp. Pl., ed. 1, imp. 1, 2: 626. 1753; Gen. Pl., ed. 5, 275. 1754.

Additional & emended synonymy: Petraea L. ex B. Juss. in A. L. Juss., Gen. Pl., ed. 1, 108. 1789. Petraea Houst. ex Meisn., Pl. Vasc. Gen. 2: 199. 1840. Petrea Auct. ex Meisn., Pl. Vasc. Gen. 2: 199, in syn. 1840. Petraea B. Juss. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 477, in syn. 1894. Petra Cooke ex Woodr., Gard. Trop., ed. 6, imp. 8, 442. 1910. Petraca Mold. ex F. C. Hoehne, Resen. Hist. Secc. Bot. Agron. Inst. Biol. S. Paulo 153, sphalm. 1937. Petraes Vell. ex Sampaio, Bol. Mus. Nac. Rio Jan. 13: 287, sphalm. 1937. "Petrea (Petraea) Houst. ex Linn." ex Bor & Raizada, Some Beaut. Indian Climb. 141. 1954. Petrae Barroso, Rodriguésia 32: [69], sphalm. 1957. Petroea Grindal, Everyd. Gard. India, ed. 16, 40 & 81. 1960. Petrea (Houst.) L. ex Soukup, Biota 5: 14. 1964. Petraea Haust. ex Datta & Majumdar, Bull. Bot. Soc. Bengal 20: 102, sphalm. 1966.

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2, 551. 1832; Endl., Gen. Pl. 1: 636 & 637. 1838; G. Don in Loud., Hort. Brit., ed. 3, 247. 1839; Sweet, Hort. Brit., ed. 3, 551. 1839; Meisn., Pl. Vasc. Gen. 2: 199. 1840; Spach, Hist. Nat. Vég. Phan. 9: 227. 1840; D. Dietr., Syn. Pl. 3: 372. 1843; Voigt, Hort. Suburb. Calc. 471. 1845; Schau., Linnaea 20: 482. 1847; Schnitzl., Icon. Fam. Nat. Reg. Veg. 2: 137 Verbenac. [3]. 1856; Buek, Gen. Spec. Syn. Candoll. 3: 338. 1858; Bocq., Adansonia 2: 19, 89, 99—101, 109, 116, 117, 123, 125, 127, 130, 135, 136, 138, 142, & 154 (1862) and 3: 154, 180, 184, & 250—251, pl. 20. 1863; Bocq., Rev. Verbenac. 19, 89, 99—101, 109, 116, 117, 123, 125, 130, 135, 136, 138, 142, 154, 178, 180, 184, & 250—251, pl. 20. 1863; Turcz., Bull. Soc. Imp. Nat. Mosc. 36 (2): 211—212. 1863; Griseb., Cat. Pl. Cub. 216. 1866; Edgeworth, Pollen, ed. 1, 76 & 96, pl. 6, fig. 107 (1877) and ed. 2, 76 & 96, pl. 6, fig. 107. 1879; Castle, Journ. Hort., ser. 3, 7: 52—53. 1883; Wittmack (transl.) & Castle, Gart. Zeit. 3: 277—278. 1884; Vesque, Ann. Sci. Nat. Paris, ser. 7, 1: 337, 339, 341, 343, & pl. 15, fig. 4. 1885; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 477—478. 1894; Nairne, Flora Pl. West. India 249. 1894; Sessé & Moc., Fl. Mex., ed. 2, 150. 1894; Solerden., Syst. Anat. Dicot. 711, 712, 715, & 716. 1899; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; T. Peckolt, Bericht. Deutsch. Pharm. Gesell. 14: 465 & 476—478. 1904; Cooke, Fl. Presid. Bombay, ed. 1, 3: 437. 1906; Cove, Gard. Chron., ser. 3, 39: 24 & 25, fig. 15. 1906; D. H. Scott in Solerden., Syst. Anat. Dicot., transl. Boddle & Fritsch, 1: 630—635, fig. 151 A & B. 1908; Solerden., Syst. Anat. Dicot. Ergänz. 254. 1908; Woodr., Gard. Trop., ed. 6, imp. 8, 442 & 633. 1910; Duthie, Fl. Upp. Gang. Pl. 2: 229. 1911; Goyena, Fl. Nicarg. 1: 565—566. 1911; M. Kunz, Anatom. Untersuch. Verb. 64—66. 1911; Loes., Verh. Bot. Ver. Brand. 53: 80. 1912; E. D. Merr., Fl. Manila, imp. 1, 397, 399, & 400. 1912; H. Hallier, Meded. Rijks Herb. Leid. 37: 84. 1918; A. Chev., Cat. Pl. Jard. Bot. Saigon 36. 1919; R. S. Flores, Bol. Univ. Nac. Sureste, ser. 2, 1 (5): 332. 1922; Haines, Bot. Bihar & Orissa, ed. 1, 4: 704 & 708. 1922; Fedde in Just, Bot. Jahresber. 45 (1): 552. 1923; Fedde & Schust. in Just, Bot. Jahresber. 45 (1): 149. 1923; L.H. Bailey, Man. Cult. Pl., ed. 1, imp. 1, 628, 632, & 833. 1924; Gamble, Fl. Presid. Madras 6: 1106. 1924; Haines, Bot. Bihar & Orissa, ed. 1, 6: 704 & 708. 1924; Parker, Forest Fl. Punj., ed. 2, 405. 1924; Rehnelt, Gartenweld 28: 367. 1924; P. C. Standl., Contrib. U. S. Nat. Herb. 23: 1235 & 1237. 1924; L. H. Bailey, Man. Cult. Pl., ed. 1, imp. 2, 628, 632, & 833. 1925; Pittier, Bol. Cienc. Tecn. Mus. Com. Venez. 1: [Arbol. Arbust. Nuev. Venez.] 70. 1925; Wangerin in Just, Bot. Jahresber. 53 (2): 645 (1925) and 46 (1): 717. 1926; Fedde in Just, Bot. Jahresber. 46 (2): 655. 1929; R. E. Arnold, Gard. Chron., ser. 3, 87: 64. 1930; Wangerin in Just, Bot. Jahresber. 50 (1): 237. 1930; Benoist, Arch. Bot. Caen 5, Mem. 1: 258. 1931; Roys, Ethno-bot. Maya [Tulane Univ. Midd. Am. Res. Ser. Publ. 2:] 272 & 324. 1931; W. Trelease, Wint. Bot., ed. 3, imp. 1, 332. 1931; Bonstedt, Pareys Blumengärtn., ed. 1, 272 & 277. 1932; Wangerin in Just, Bot.

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Harrison, Climb. & Trail. 69 & 115, pl. 162. 1973; Hegnauer, Chemotax. Pfl. 6 [Chem. Reihe 21]: 678. 1973; Howard, Journ. Arnold Arb. 54: 461. 1973; "H. R.", Biol. Abstr. 56: 1348. 1973; J. Hutchins., Fam. Flow. Pl., ed. 3, 487, 950, & 951. 1973; López-Palacios, Pittiera 5: 47. 1973; López-Palacios, Revist. Fac. Farm. Univ. Andes 9 (13): 56 & 65. 1973; Mold., Phytologia 25: 228, 234, 242, & 509 (1973), 26: 365, 368, 375, & 508 (1973), and 27: 143 & 368. 1973; Mold. in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 42, 81—87, & 147, fig. 7. 1973; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl., imp. 2, 716. 1974; El-Gazzar, Egypt. Journ. Bot. 17: 75 & 78. 1974; Gibbs, Chemotax. Flow. Pl. 3: 1753 & 1754. 1974; M. R. Henderson, Malay. Wild Flow. Dicot., imp. 2, 380. 1974; Howes, Dict. Useful Pl. 212. 1974; "H. R.", Biol. Abstr. 57: 1904. 1974; Lasser, Braun, & Steyerm., Act. Bot. Venez. 9: 36. 1974; Alain in León & Alain, Fl. Cuba, imp. 2, 2: 279 & 297—298, fig. 128. 1974; López-Palacios, Pittieria 6: 13 & 28. 1974; López-Palacios, Revist. Fac. Farm. Univ. Andes 14: 22. 1974; Mold., Phytologia 27: 510 (1974), 28: 432, 436, 450, 461, & 510 (1974), and 29: 76. 1974; A. L. Mold., Phytologia 29: 171. 1974; Molina R., Ceiba 18: 66. 1974; J. F. Morton, 500 Pl. South Fla. opp. [97] & 115. 1974; Troncoso, Darwiniana 18: 297, 301, 306, 367—369, & 411, fig. 22 & 23. 1974; J. V. Watkins, Fla. Landscape Pl., ed. 1, imp. 5, 305, 366, & 367. 1974; Bose & Mondal, Pl. Sci. Lucknow 7: 23—27. 1975; O. & I. Degener & Pekelo, Hawaii. Pl. Names x.13. 1975; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [87]. 1975; Kooiman, Act. Bot. Neerl. 24: 463. 1975; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 30 & 63—70, fig. [13]. 1975; Mahesh., Journ. Bombay Nat. Hist. Soc. 72: 180. 1975; Mold., Phytologia 29: 510 (1975), 31: 375, 378, 379, 383, 392, & 406 (1975), and 32: 228 & 458. 1975; Molina R., Ceiba 19: 96. 1975; Sharma, Bull. Bot. Soc. Bengal 29: 143. 1975; J. A. Steyerm., Act. Bot. Venez. 10: 184. 1975; Walls, Compl. Book Greenh. Gard. 322. 1975; L. H. & E. Z. Bailey, Hortus Third 1149. 1976; Follman-Schrag, Excerpt. Bot. A.26: 513. 1976; Fosberg, Rhodora 78: 113. 1976; Hatcher in Scott, Stand. Post. Stamp Cat. 133 (1): 212. 1976; Ghouse, Khan, & Khan, Ann. Arid Zone 15: 112—113. 1976; Hocking, Excerpt. Bot. A.28: 259. 1976; Kunkel, Excerpt. Bot. A.26: 416. 1976; Laurence & Mohammed, Journ. Agr. Soc. Trin. & Tobago 76: 345. 1976; López-Palacios, Revist. Fac. Farm. Univ. Andes 17: 48. 1976; Mold., Phytologia 32: 511 (1976) and 34: 251, 252, 256, 257, 259, 263, 270, & 508. 1976; Soukup, Biota 11: 2, 14, & 21. 1976; Srivastava, Fl. Gorak. 252 & 256—257. 1976; Bose & Mondal, Biol. Abstr. 65: 3289. 1977; "C. J. M.", Biol. Abstr. 64: 3290. 1977; Clay & Hubbard, Haw. Gard. Trop. Shrubs 185 & 292. 1977; Lewis & Elvin-Lewis, Med. Bot. 324, 506, & 514. 1977; López-Palacios, Fl. Venez. Verb. 9, 11, 21, 452—480, 637—638, & 651, fig. 108—113. 1977; Mold., Phytologia 36: 32, 33, 35, 40, 45, & 508. 1977; Anon., Roy. Bot. Gard. Kew Curr. Awarens. List 6: 26. 1978; Mold., Phytologia 41: 132. 1978; Mound & Halsey, Whitefly World 67, 211, 213, 305, & 312. 1978; Puff, Biol. Abstr. 66: 4317. 1978; Puff, Journ. S. Afr. Bot. 44:

119--125, fig. 1--7. 1978; R. F. Sm., Act. Bot. Venez. 13: 182, 193, 207, & 262. 1978; Steyerm. & Huber, Fl. Avila 44, [66], 100, 112, 861, [866]—868, & fig. 302 & 303. 1978; Tlamsa in Minkus New World Wide Stamp Cat. 1977-1978 1 (1): 104. 1978; Mold., Phytologia 41: 450 & 509. 1979; Anon., Guide Some East Afr. Flow. Trees 3. n.d.

Bor & Raizada (1954) remind us that "This genus was named in honor of Lord Petre, (1713—1743), Thorndon, Essex, [England], who in his short life had managed to put together the finest collection of exotic plants then existing in Europe". He is said, according to Macbride (1960), to have been the first to grow Camellia japonica in Europe.

Bernardi & Robert (1966) comment that "other authors write [the generic name as] Petraea, but William Houstoun (1695-1733) who discovered the type species in Mexico near Vera Cruz in 1732 wanted to dedicate the name to Lord Robert Petre (1713-1743)" and so the spelling should be Petrea. This and other species of the genus are commonly called "chapeau de veuve" or "viuvinha"; in Venezuela the genus is commonly called "chaparrillo", "Marie penitente", "Nazareno", and "penitente". Aristeguieta (1973) comments that "Son plantas muy ornamentales por su floración morada hasta blanca, siendo plantas muy resistentes como ornamentales de parques y jardines". J. G. Agardh actually proposed a separate family, the Petreaceae, for the genus. Soukup (1964) lists "sanango sacha" as the popular name for the genus in Peru. López-Palacios (1975) rightly notes that "Indiscutiblemente el género es uno de las más ornamentales de la familia".

Melchior (1964) reports that in this genus the "Blätter [sind] mit Lichtsinneorganen (Ozellen)". Mitchelmore (1967) notes that the fruit is wind-dispersed, the 5 elongated sepals acting as propellers. He provides a line-drawing illustrating the flowers and fruit of an unidentified species. Van der Pijl (1969) adds that the colored calyx-wings "develop from the bracts [which is not true]" and first "collaborate" with the corolla in attracting "animals for pollination" and then "help in dispersal".

Goyena (1911) places the genus Petrea in a Subtribe "Petreas" Schau., obviously a misspelling of the Petreae of Schauer (the Petraeae of Briquet). Gallandat in Bull. Soc. Neuchatel Sci. Nat. 95: 97—111 (1972) refers to a "Quercidion pubescens-Petraeae" in his study of the vegetation skirting the oak crop in three localities at the foot of the Swiss Jura", but just what he means by this is unclear since Petrea does not occur wild in Europe at the present time. Probably he is referring, instead, to Quercus petraea (Mattuschka) Lieblein, a European species of oak.

It is to be noted that the Endlicher (1838) reference cited in the bibliography above is often cited as "1836-1856", but the page involved with Petrea was actually issued in 1838. The revised dates for the Humboldt, Bonpland, & Kunth works are in accordance with Barnhart (1902). The index in Esteva's work (1969) indicates

that the genus is discussed on page "159", but this seems to be an error for p. 355 as corrected in the Addenda.

Additions to the list of taxa excluded from the genus as previously published by me are

Petraea bignonioides H.B.K. ex Pittier, Supl. Pl. Usual. Venez.

55. 1939 = Vitex capitata Vahl.

Petraea violacea Angely, Fl. Anal. Fitogeogr. Est. S. Paulo, ed. 1, 4: xiv. 1970 = Petunia violacea Lindl., Solanaceae.

Petrea bignonioides H.B.K. ex López-Palacios, Fl. Venez. Verb.

589 & 651, in syn. 1977 = Vitex capitata Vahl.

The Mrs. D. J. Collins 1969, distributed as a species of Petrea, actually is Sphenodesme pentandra in the Sympcoremaceae, while Duke 9868 is not verbenaceous, McGregor, Harms, Robinson, Rosario, & Segal 884 is Agdestis clematidea Moc. & Sessé (Agdestidaceae), Pfeiffer 1739 is Congea tomentosa Roxb. (Sympcoremaceae), and Tyson, Dwyer, & Blum 3157 is Triplaris gardenianus Wedd. (Polygonaceae).

**PETREA AMAZONICA** Mold., Feddes Repert. Spec. Nov. 43: 173—174. 1938.

Additional bibliography: Mold., Biol. Abstr. 36: 3141. 1961; Mold., Phytologia 7: 409. 1961; Hocking, Excerpt. Bot. A.6: 533. 1963; Mold., Fifth Summ. 1: 168 & 366 (1971) and 2: 897. 1971.

Recent collectors describe this species as a vine and have encountered it along roadsides, on "terra firme", and in "mata" [= unflooded land and woodland]. The corollas are said to have been "blue" on Krukoff 4694 and Santos 1580, "violet" on Duke 212, and "rôxo-oscuras sem perfume" on Guedes 496. The plant has been collected in anthesis by recent collectors in January, May, and June. The common name, "viuvinha", is reported for it by Guedes.

Material of P. amazonica has been misidentified and distributed in some herbaria as P. aspera Turcz.

Additional citations: BRAZIL: Amazônas: Krukoff 4694 (A). Bahia: Santos 1580 (Z). Ceará: Guedes 496 (N). CULTIVATED: Brazil: Ducke 212 (N, N).

**PETREA ANDREI** Mold., Feddes Repert. Spec. Nov. 43: 188--190. 1938.

Additional bibliography: Mold., Biol. Abstr. 36: 3141. 1961; Mold., Phytologia 7: 409. 1961; Hocking, Excerpt. Bot. A.6: 533. 1963; Mold., Fifth Summ. 1: 137 (1971) and 2: 897. 1971.

**PETREA ARBOREA** H.B.K., Nov. Gen. Sp. Pl., ed. folio, 2: 228 [as Petraea]. 1817; Spreng. in L., Syst. Veg., ed. 16, 2: 761. 1825.

Additional synonymy: Petrea splendens López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 66, sphalm. 1975. Petrea arborea Turcz. ex López-Palacios, Revist. Fac. Farm. Univ. Andes 15: fig. [13]. 1975. Petrea vicentina Turcz. apud Mold., Fifth Summ. 2:

599, in syn. 1971. Verbena arborea Gibbs, Chemotax. Flow. Pl. 3: 1753. 1974.

Additional & emended bibliography: H.B.K., Nov. Gen. Sp. Pl., ed. folio, 2: 228 (1817) and ed. quart., 2: 282—283. 1818; Sweet, Hort. Brit., ed. 1, 1: 490. 1826; G. Don in Loud., Hort. Brit., ed. 1, 247. 1830; Sweet, Hort. Brit., ed. 2, 417. 1830; Cham., Linnaea 7: 367—368. 1832; G. Don in Loud., Hort. Brit., ed. 2, 247 & 551 (1832) and ed. 3, 247 & 551. 1839; Sweet, Hort. Brit., ed. 3, 551. 1839; Schau., Linnaea 20: 482. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 338. 1858; Edgeworth, Pollen, ed. 1, 76 & 96, pl. 6, fig. 107. 1877; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 478. 1894; Solererd., Syst. Anat. Dicot. 712 & 716. 1899; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; D. H. Scott in Solererd., Syst. Anat. Dicot. [transl. Boodle & Fritsch] 1: 631 & 634. 1908; Goyena, Fl. Nicarag. 1: 566. 1911; M. Kunz, Anatom. Untersuch. Verb. 64. 1911; Loes., Verh. Bot. Ver. Brand. 53: 80 [Abhandl. 245]. 1912; Roys, Ethno-bot. Maya [Tulane Univ. Midd. Am. Res. Ser., Publ. 2:] 272 & 324. 1931; Schipp, 1933-34 Price-list 39 & 50. 1934; Matschat, Mex. Pl. Am. Gard. 234. 1935; H. B. Davis, Life Works Pringle 173. 1936; M. Martínez, Cat. Nomb. Vulg. Cientif. Pl. Mex., ed. 2, 339. 1937; Pittier, Supl. Pl. Usual. Venez. 55. 1939; Robledo, Lecc. Bot. 2: 499. 1940; Perez-Arbelaez, Pl. Util. Colomb., ed. 1, 443. 1947; R. O. Williams, Usef. Ornam. Pl. Zanzib. 9, 57, & 71. 1949; Metcalfe & Chalk, Anat. Dicot. 1033 & 1038. 1950; Bravo Hollis & Ramírez Cantú, Anal. Inst. Biol. Mex. 22: 421. 1951; Chittenden, Dict. Gard. 1534. 1956; Perez-Arbelaez, Pl. Util. Colomb., ed. 2, 733. 1956; B. & B. Hargreaves, Trop. Bloss. 31. 1960; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 662. 1960; Mold., Phytologia 7: 431—432. 1961; O'Gorman, Mex. Flow. Trees 92 & [93]. 1961; Menninger, Flow. Trees World 284, pl. 413. 1962; Pesman, Meet Fl. Mex. 226 & 276. 1962; R. Good, Geogr. Flow. Pl. 188. 1964; Bose, Handb. Shrubs 10—11, 16, 77, 115, & 122. 1965; Kundu & De, Bull. Bot. Surv. India 10: 406. 1968; Esteva, Arb. Ornament. Trop. 355—357. 1969; Lasser, Act. Bot. Venez. 4: 48. 1969; El-Gazzar & Wats., New Phytol. 69: 462, 483, & 485. 1970; Gibson, Fieldiana Bot. 24 (9): 218. 1970; Lowden, Taxon 19: 845. 1970; Mold., Fifth Summ. 1: 112, 119, 126, 130, & 366 (1971) and 2: 595, 597—600, 603, 652, & 897. 1971; Farnsworth, Pharmacog. Titles 7 (10): xii. 1972; Fong, Trojánskova, Trojánek, & Farnsworth, Lloydia 35: 147. 1972; Rouleau, Taxon Index Vols. 1-20 part 1: 280. 1972; Mold., Phytologia 23: 426 & 434 (1972) and 25: 242. 1973; El-Gazzar, Egypt. Journ. Bot. 17: 75 & 78. 1974; Gibbs, Chemotax. Flow. Pl. 3: 1753 & 1754. 1974; Alain in León & Alain, Fl. Cuba, imp. 2, 2: 298. 1974; Mold., Phytologia 28: 450. 1974; [Farnsworth], Pharmacog. Titles 7, Cum. Gen. Ind. [87]. 1975; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 64—66, fig. [13]. 1975; Mold., Phytologia 31: 392 & 406. 1975; Molina R., Ceiba 19: 96. 1975; J. A. Steyermark, Act. Bot. Venez. 10: 184. 1975; Laurence & Mohammed, Journ. Agr. Soc. Trin. & Tob. 76: 345. 1976; Mold., Phytologia 34: 257 & 270. 1976; López-Palacios, Fl. Venez. Verb. 454—462, 638, 651, & 652, fig. 108. 1977; Mold., Phytologia 41:

132. 1978; Mound & Halsey, Whitefly World 67 & 213. 1978; R. F. Sm., Act. Bot. Venez. 13: 193, 207, & 262. 1978; Steyermark & Huber, Fl. Avila 864, [867], & 868, fig. 303 C. 1978; Mold., Phytologia 41: 450. 1979.

Additional illustrations: Menninger, Flora. Trees World pl. 413 (in color). 1962; Bose, Handb. Shrubs opp. 73. 1965; Esteva, Arb. Ornament. Trop. 356 & 357 (in color). 1969; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: fig. [13]. 1975; López-Palacios, Fl. Venez. Verb. [457], fig. 108. 1977; R. F. Sm., Act. Bot. Venez. 13: 262. 1978.

Vernacular names for P. arborea reported by recent collectors and authors are "arquaco", "azulina", "bejuco", "bejuco de caballo", "blue petrea", "cucharo", "flor de viuda", "fruto de paloma", "jazmín azul", "liane de St. Jean", "María", "Maria penitente", "Nazareno", "opptizimin", "palo de la cruz", "penitente", "pluma de la reina", "tostadito", "totopostillo", "tree petrea", and "upright petrea".

Sweet (1826) gives the date of the introduction of this species into cultivation in England as 1824, but Chittenden (1956) asserts that it was in gardens there in 1823. Alain (1974) records it from cultivation in Cuba, saying "Se ha citado también de Cuba P. arborea HBK., aunque probablemente sólo esté en cultivo". Molina (1975) avers that it occurs in gardens in Honduras, while Goyena (1911) records it from Nicaragua. It is most probable, however, that both these Central American "records" apply instead to P. volubilis L.

Petrea vincentina Turcz. is based on a Caley collection from the island of St. Vincent. Smith (1978) lists P. arborea from Lara, Venezuela. Standley & Record call it a large woody vine, "One of the handsomest of all Central American plants because of the abundance of blue flowers, the color depending chiefly on the calyx lobes which retain their color for a long time." What they refer to, however, is P. volubilis L., the common Mexican and Central American species.

Marshall says of P. arborea: "A small evergreen tree only reaching a girth of a foot or so....The flowers are bluish-mauve borne profusely in long sprays and the tree is highly ornamental. Its natural occurrence is extremely rare, but it has been planted in gardens to a fair extent....It tends to occur in the drier areas" of Trinidad. Bose (1965) tells us that it does not root easily from layers, but when grafted on to P. volubilis will unite in about one month. It does not respond favorably to pruning. It is a tall slow-growing shrub, thriving in sun and rich soil, and with blue flowers, "blues and violet not [being] common in perennial plants".

Marshall's statement that P. arborea is "one of the handsomest of all Central American trees, blooming 3 times a year" is certainly erroneous, probably having been copied from Standley & Record (above) since it does not occur in Central America and the species there, P. volubilis, is usually a vine.

Recent collectors describe P. arborea as a shrub or tree, 2--6.5 m. tall, or an "arbusto recostadizo", the leaves very harsh to touch, the inflorescences showy, the bracts lilac, and the calyx pilose with a few glandular hairs. They have encountered it in dry hillside pastures and at the fringes of forests, at 600--700 m. altitude, flowering in January and February. The corolla is said to have been "blue" on López-Palacios 3589, Mills 147, and Pittier & Curran 15306, "blue-purple" on Howard 10401, "purple" on Haught 4046, "violet" on Alston 5976, and "pale-mauve" on Mills 196. Pittier & Curran refer to the plant as "occasional". According to Laurence & Mohammed (1974) it is used as a bee plant in Trinidad. The pollen is described by Edgeworth (1877) as "oblong, flat, a pore at the ends, in water 3-cornered". Gibbs (1974) reports syringin absent from the stems and cyanogenesis absent from the leaves.

Mound & Halsey (1978) list P. arborea as one of the host plants for the whiteflies, Aleurotrachelus sp. (in Trinidad) and Trialeurodes mirissimus Samps. & Drews.

As is apparent from what has been said above, P. arborea has been confused widely in literature and herbaria with P. volubilis L. The P. arborea of Loesener (1912), based on Seler 1777 from Oaxaca, Mexico, is certainly P. volubilis.

López-Palacios (1977) cites as true P. arborea from Venezuela the following collections: Aragua: Badillo 3081; Delgado 101, 135; Fendler 867; Holt 326; Humboldt & Bonpland s.n. [Herb. Willd. 11489, Guacara, Hacienda de Cura, & Villa de Cura, Feb. 1800] type collection; Montaldo 4006; Pittier 6063, 15237, 15306; Vogl 298, 1178. Bolívar: Trujillo 2422; Wurdack & Monachino 41293. Carabobo: Alston 5976; Fernandez-Yépez F.662, Pittier 8774; Saer 831; Stauden 24; Trejos V.91. Cojedes: Burkart 16222; Chardon 20. Falcón: Christ 45; Lasser 4318; Madriz 31; Steyermark 99055. Federal District: Herb. Jacquin s.n.; Manara s.n.; Moritz 191; Otto 570; Pittier 7786, 7853, 9449, 12525, 13573; Trujillo 999, 1421; Wagener 293; Ll. Williams 10061. Guarico: Aristeguieta 4674; Tamayo 4626. Lara: Cardona 4187; Ewel 14; Ferrari & al. 311; Saer 393; R. T. Smith V.3058; Steyermark 55546; Tamayo 3332, 3383; Trujillo 2551. Portuguesa: Pittier 11749. Yaracuy: Burkart 16485; Steyermark & Carreño 106799. State undetermined: Curran 577. Of Saer 831 he says "Este ejemplar, lo mismo que Pittier 8774, han sido determinados por el Dr. Moldenke y citados en su monografía como P. pubescens; pero después de un estudio cuidadoso de los especímenes y las poblaciones, los retrotraigo a este lugar. Dudo mucho también de Saer 393." He also says that I identified as P. pubescens Chardon 20, Aristeguieta 4674, Saer 393, Tamayo 3332 & 3383, and Burkart 16485, but all of which he feels are P. arborea.

Gibbs (1974) erroneously lists P. arborea as "Verbena arborea", a synonym of V. litoralis H.B.K.

The revised Humboldt, Bonpland, and Kunth references given in

the heading and bibliography of this species (above) are in accordance with Barnhart (1902). The reference by Roys (1931) to *P. arborea* obviously applies, instead, to *P. volubilis*.

The Peele 798, distributed as *P. arborea*, actually is *P. aspera* Turcz., while Ruiz-Terán & López-Palacios 10871 is *P. kohautiana* Presl, Little 15567 and H. H. Smith 1521 are *P. pubescens* Turcz., Conzatti, Reko, & Makrinius 3001, Creighton 724, Dilmy s.n. [Herb. Bogor. Bot. Gard. XI.C.29], Gilly, Simpson, & Dodds 57, Janzen s.n. [6 February 1964], T. MacDougall 5985, C. D. Mell s.n. [near Campeche, Feb. 1945], Pringle 5003 & 8004, C. L. Smith 1017 & s.n. [San Francisco, 1894], and Smith & Barkley 17M174 are *P. volubilis* L., F. Chiang 343, Cox 850 [Herb. Cox 641], Crisman & Willis 200, C. C. Deam 6092, and Linden 18 (in part) are *P. volubilis* var. *pubescens* Mold., and Gilly, Simpson, & Dodds 136 is *Agdestis clematidea* Moç. & Sessé in the *Agdestidaceae*.

Additional & emended citations: TRINIDAD & TOBAGO: Trinidad: Britton, Freeman & Watts 2689 (W-1194474); W. E. Broadway 5271 (Ca-363897, E-914392, F-549648), 7568 (F-699673), s.n. [May 22, 1911] (D-583015, E-862830, F-492743, W-1047650), s.n. [Sept. 6, 1913] (W-1194670), s.n. [June 12, 1920] (E-939917); Field Mus. Econ. Pl. 611126 (0a). MONOS: R. A. Howard 10401 (Mi, N). COLOMBIA: Magdalena: Haught 4046 (W-1708852). VENEZUELA: Aragua: Delgado 101 (F-1003977), 135 (F-925664); Pittier 6063 (W-601791); Pittier & Curran 15306 (Ve-25087, W-1901137); Ll. Williams 10035 (F-940746, F-946517). Carabobo: Alston 5976 (N); Pittier 8774 (W-1065338). Cojedes: Burkart 16222 (Ve). Falcón: Lasser 4318 (Ve); J. A. Steyermark 99055 (Z). Federal District: Pittier 7786 (W-987883), 7853 (W-987951), 9449 (W-1068303), 13573 (E-110741); Ll. Williams 10061 (F-940722). Portuguesa: Pittier 11749 (Mu-4362, W-1232655, Y-7744). CULTIVATED: South Africa: A. P. Mills 147 (Ba), 196 (Ba). Sri Lanka: Collector undetermined s.n. [Royal Bot. Gard. Peradeniya, Sect. R, July 1895] (Pd). Tobago: W. E. Broadway 4769 (E-741211, W-759638). Venezuela: López-Palacios 3589 (Ld, N). MOUNTED ILLUSTRATIONS: H. N. Moldenke color slide 304 (Z).

*PETREA ARBOREA* f. *BROADWAYI* (Mold.) Mold., Phytologia 41: 450. 1979.

Synonymy: *Petrea arborea* var. *broadway* Chittenden, Dict. Gard. 1534. 1956.

Additional bibliography: Schipp, 1933-34 Pricelist 39 & 50. 1934; Mold., Verb. 19. 1955; Chittenden, Dict. Gard. 1534. 1956; Mold., Phytologia 7: 432-433. 1965; Lowden, Taxon 19: 845. 1970; Mold., Fifth Summ. 1: 366 (1971) and 2: 897. 1971; Mold., Phytologia 23: 426 & 434 (1972) and 41: 450. 1979.

Emended citations: CULTIVATED: Trinidad: W. E. Broadway s.n. [1908] (Ca-416296-type, E-926018-isotype).

**PETREA ASPERA** Turcz., Bull. Soc. Imp. Nat. Mosc. 36 (2): 211.  
1863.

Synonymy: Petraea aspera Turcz. ex Pittier, Suppl. Pl. Usual. Venez. 55. 1939. Petraea pauciflora (Benth.) Duke ex Mold., Résumé Suppl. 16: 25, in syn. 1968. Petrea aspera L. ex Gibson, Fieldiana Bot. 24 (9): 218, sphalm. 1970. Petraea volubilis Schau. ex Braga, Fl. Nordest., ed. 2, 479, in syn. 1960 [not P. volubilis Gaertn., 1791, nor Jack, 1947, nor Jacq., 1832, nor L., 1763 & 1919, nor Willd., 1940].

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 478 (1894), imp. 2, 2: 478 (1946), and imp. 3, 2: 478. 1960; Braga, Fl. Nordest., ed. 2, 479. 1960; Mold., Phytologia 7: 433. 1961; Mold., Résumé Suppl. 16: 4 & 25. 1968; Rollet, Adansonia, ser. 2, 8: 543 & 549. 1968; J. A. Steyermark., Act. Bot. Venez. 3: 156. 1968; Mold., Phytologia 18: 421. 1969; Anon., Biol. Abstr. 51 (1): B.A.S.I.C. S.159, S.169, & S.226. 1970; Gibson, Fieldiana Bot. 24 (9): 218. 1970; Mold., Biol. Abstr. 51: 460. 1970; Hocking, Excerpt. Bot. A.18: 444. 1971; Mold., Fifth Summ. 1: 91, 119, 126, 134, 168, & 366 (1971) and 2: 595, 596, & 897. 1971; Mold., Phytologia 23: 434. 1972; Mold. in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 83—86 & 147, fig. 7. 1973; Mold., Phytologia 28: 461. 1974; Troncoso, Darwiniana 18: 41 & 369. 1974; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 64 & 66. 1975; Mold., Phytologia 31: 379. 1975; Molina R., Ceiba 19: 96. 1975; Mold., Phytologia 34: 252. 1976; López-Palacios, Fl. Venez. Verb. 452, 454, 462—468, & 637—638, fig. 109. 1977; Steyermark. & Huber, Fl. Avila 44, [66], 861, 864, [866], & 868, fig. 302A. 1978.

Additional illustrations: Mold. in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 84. 1973; López-Palacios, Fl. Venez. Verb. [463], fig. 109. 1977; Steyermark. & Huber, Fl. Avila [66] (in color) & [866] fig. 302 A. 1978.

Recent collectors describe this plant as an ornamental, woody, high-climbing vine or liana, 4—15 m. long, or a shrub or small tree, 2—4 m. tall, erect, unarmed, the bark smooth, the stems to 2.5 cm. in diameter at the base, the foliage stiff and papery, crackling when broken, medium- to pale-green or else medium-green above and paler beneath, slightly glossy, scabrid, the flowers slightly or very fragrant, the calyx petaloid, blue or bluish to lavender or purple, the lobes approximately "RHS Wistaria Blue 640/2", the corollas early deciduous. They have found it growing in woods, primary forests, deep or marshy rainforests, rocky upland chaparral, on savannas, often by native plantations, and "on cliffs in forest along quebradas and adjacent pastures", at altitudes of sealevel to 1800 meters, flowering from November to May and in September, in fruit in September and November.

López-Palacios describes it as an "arbolito de ramos reclinados sobre la vegetación adyacente, ca. 5 m. de alto. Hojas lisas por la haz, algo ásperas y con muchos puntos glandulosos por el envés. Flores longipedunculadas, de cáliz costado y lóbulos ca. 1.5 cm. de largo, en racimos hasta de 40 cm. de largo. Corola violácea;

cálix azul-violáceo."

The corollas are described as having been "blue" on Duke 8079, 9303, & 10071, Maguire & al. 56867, Skog 1205, and Tyson 3747, "violet" on López-Palacios 2586, "purple-violet" on Lewis & al. 195, "purple" on Blanco 499, Breteler 4572 & 5149, Ruiz-Terán & López-Palacios 9784, and Tyson & Blum 3892, "deep-purple" on Lewis & al. 5317, "dark-purple" on Lewis & al. 5427, "lavender" on Kennedy & al. 3110 and Tyson & Loftin 3849, "dark-purple with white at the throat" on Nee & Dressler 9380, and "corolla-lobes from RHS Mineral Violet 635/1 and 635/2, the throat white" on Peele 798.

The species is cultivated as an ornamental in Venezuela; Molina (1975) records it from Honduras. Breteler 4572 & 5149 are accompanied by wood samples from the base of the main stem. López-Palacios & Bautista 3549 is a possible topotype collection.

Vernacular names for P. aspera recorded by recent authors and/or collectors are "bejuco de Mayo", "bejuco de palo", "capela de viúva", "chaparrito", "chorão de viúva", "cipó azul", "coroa de viúva", "flor azul", "flor de la cruz", "flor de níño", "flor de mayo", "flor de S. Miguel", "flor de viúva", "grinalde de viúva", "guamo macho", "Nazareno", "penitente", "pluma de la reina", "primavera", "San José", "San José de palo", "Santa Lucía", "tostadito", "toucado", and "toucado de viúva".

Steyermark (1968) cites Blanco 145 & 499 from Venezuela, while López-Palacios (1977) cites the following from the same country: Anzoategui: Chaper s.n. [Barcelona 1885]. Aragua: Oberwinkler s.n. [9-II-1969]; Pittier & Nakichenovich 15430; Vogl 299, 939; Ll. Williams 10077, 10160. Bolívar: Bernardi 3053; Delascio 2302; Ll. Williams 11475; Wurdack & Monachino 39641. Carabobo: Funck & Schlim 507; Schnee 1194; Tamayo 2223; Trujillo 6101; Wetzel & Muller 746. Delta Amacuro: Blanco 499; Wurdack & Monachino 39641. Federal District: Aristeguieta 6646; Benítez 150; Jahn 343; Landsbergen 228; Manara s.n. [14-V-1976]; Stauden 111; Vogl 1182. Mérida: Bernardi 1913; Breteler 4572; López-Palacios 87, 2549, 2586; López-Palacios & Bautista 3549; Ruiz-Terán & López-Palacios 6169. Miranda: Aristeguieta 2868; Steyermark & Carreño 106909. Monagas: Breteler 5149; Ruiz-Terán & López-Palacios 9784. Sucre: Ruiz-Terán 2885; Steyermark 62638, 62801. Yaracuy: Aristeguieta & Fol-dats 1370; Killip 37068; Pittier 11769; Trujillo & Fernández 794.

Additional & emended citations: PANAMA: Canal Zone: Bangham 601 (F-711017); Blum 2232 (E--1836108); Epplesheimer s.n. [1910] (F-285371); Frost 196 (F-589207); Goldman 1868 (W-690324); Lewis, Porter, Durkee, & Baker 5317 (Ac), 5427 (Z); Maggs II.48 (F-960502); Pittier 2275 (W-676531); Shattuck 412 (F-649968); P. C. Standley 27609 (W-1217662); Tyson & Blum 3892 (E-1832145); Tyson & Loftin 3849 (E-1832090); Wetmore & Abbe 162 (F-650425); Woodworth & Vestal 385 (F-650668). Chiriquí: Liesner 369 (W-2745303).

Colón: Pittier 3895 (W-678972). Darién: P. H. Allen 4293 (E-1597146); Duke 8079 (E-1833530, Oh), 9303 (W-2547337), 10071 (E-1890777). Panamá: Kennedy, Dressler, & Wilder 3110 (W-2788968); Nee & Dressler 9380 (W-2780668); Paul 281 (W-1589470); Pittier 6531 (W-716597); R. S. Williams 702 (W-678227, W-678228). San Blas: Lewis, Dwyer, Elias, & Solis 195 (E-1881636, W-2545818). Veraguas: Powell s.n. [San Francisco, Febr. 1924] (W-1206763); Tyson 3747 (E-1835336). Barro Colorado Island: Aviles 14 (E-1953168); Croat 4858 (N); Shattuck 112 (E-1953167). COLOMBIA: Bolívar: Sneidern 5765 (Ld, Mi). Santander: Haught 1568 (W-1592086). VENEZUELA: Amazonas: Foldats 130a (N). Aragua: Pittier & Nakichenovich 15430 (W-1909991); Ll. Williams 10077 (F-940716), 10160 (F-946488). Bolívar: Couret 236 (W-2710441); Ll. Williams 11475 (F-997170, F-1000632, F-1010177, W-1775290). Carabobo: Funck & Schlim 507 [Macbride photos 34293] (F-976303--isotype); Pittier 8855 (W-1065366); Whetzel & Müller s.n. [Herb. Estac. Exp. Agric. 746] (W-1778128). Delta Amacuro: C. Blanco 499 (N, N, W-2557710). Federal District: Jahn 343 (W-6945321). Mérida: Breteler 4572 (N, N, W-2582983A); López-Palacios 87 (Ft), 2586 (Mu, N); López-Palacios & Bautista 3549 (N). Monagas: Breteler 5149 (N, N, W-2583422A). Sucre: J. A. Steyermark 62368 (Ve-25624). Yaracuy: Curran 203 (Ld, N), 203m (Ac, Ld, N); Killip 37068 (W-1855273); Pittier 11769 (Mu-4361, Ve-12742, W-1232674). BRAZIL: Mato Grosso: Maguire, Murça Pires, Maguire, & Silva 56867 (N). CULTIVATED: Pennsylvania: Peele 798 (Ba). Venezuela: Ruiz-Terán & López-Palacios 6169 (N), 9784 (Ld); Skog 1205 (W-2705165). MOUNTED ILLUSTRATIONS: Mold. in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 84. 1973 (Z).

**PETREA ASPERA f. ALBIFLORA** Mold., Phytologia 18: 421. 1969.

Bibliography: Mold., Phytologia 18: 421. 1969; Anon., Biol. Abstr. 51 (1): B.A.S.I.C. S.159, S.169, & S.226. 1970; Mold., Biol. Abstr. 51: 460. 1970; Hocking, Excerpt. Bot. A.18: 444. 1971; Mold., Fifth Summ. 1: 191 (1971) and 2: 897. 1971; Mold. in Woodson, Schery, & al., Ann. Mo. Bot. Gard. 60: 82, 86, & 147. 1973.

This form differs from the typical form only in having its calyx and corolla white. It has been described as a "vine with showy white flowers" and is known thus far only from the original collection, but probably occurs sporadically through the range of the species. Collectors report the vernacular name, "bejuco de hajo" and have found the plant in flower in April. Material has been distributed and has been previously cited by me as typical P. aspera Turcz.

Citations: PANAMA: San Blas: G. P. Cooper III.234 (F-771402--isotype, N-type).

**PETREA ATROCOERULEA** Mold., Feddes Repert. Spec. Nov. 43: 195-197. 1938.

Synonymy: Petrea atrocerulea Mold. ex López-Palacios, Revist. Fac. Farm. Univ. Andes 17: 48. 1976.

Additional bibliography: J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 663-664. 1960; Mold., Phytologia 7: 433-434. 1961; Mold., Fifth Summ. 1: 119, 142, & 168 (1971) and 2: 897. 1971; López-Palacios, Revist. Fac. Farm. Univ. Andes 17: 48. 1976; Soukup, Biota 11: 14. 1976.

López-Palacios (1976) comments regarding Karlbreyer 1634 that "En ninguna parte el Río Porce corre a esta altura [3000 metros]. Quizás hay un error y la altitud deba considerarse en pies. Las otras dos citas que para la especie existen (Schultes 6063 y Dunque Jaramillo 2426) corresponden a la Comisaría del Amazonas, de alturas aproximadas de unos 100 m., en piso térmico caliente".

Macbride (1960) cites only Ruiz & Pavon s.n. from Peru.

**PETREA BLANCHETIANA** Schau. in A. DC., Prodr. 11: 617-618. 1847.

Additional synonymy: Petrea blanchettiana Schau. ex Bonstedt, Pareys Blumengärtn., ed. 1, 277. 1932. Petraea latifolia P. DC. ex Mold., Feddes Repert. Spec. Nov. 43: 166, in syn. 1938.

Additional & emended bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 338. 1858; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 478. 1894; M. Kunz, Anatom. Untersuch. Verb. 64. 1911; Bonstedt, Pareys Blumengärtn., ed. 1, 277. 1932; Jacks., in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 478 (1946) and imp. 3, 2: 478. 1960; Mold., Phytologia 7: 434. 1961; Mold., Résumé Suppl. 16: 25. 1968; Mold., Fifth Summ. 1: 168 & 366 (1971) and 2: 595-598 & 897. 1971.

Recent collectors describe this plant as a vine and as an "arbusto de galhos tortuosos e emaranhados, flores e cálice arroxeados", and have encountered it in capoeira, flowering in November. The corollas are said to have been "blue" on Santos 2158. The vernacular name, "jasmin roxo", has been recorded for it. Material has been misidentified and distributed in some herbaria as P. racemosa Nees.

Additional & emended citations: BRAZIL: Bahia: Blanchet s.n. (F-521070, Sp-8600); Martius 1029 (E-118720-cotype, Mu-896-cotype, Mu-1420-cotype); Santos 2158 (Z). Pernambuco: Pickel 2974 (W-1571559). CULTIVATED: Brazil: Teixeira 2559 [Herb. Serg. Tavares 1513] (W-2541814). MOUNTED ILLUSTRATIONS: Schau. in Mart., Fl. Bras. 9: pl. 45 I. 1851 (N, Z).

**PETREA BOREALIS** Ettingsh., Denkschr. Akad. Wiss. Wien [Foss. Fl.

Bilin. 2: 31] 28: 219, pl. 37, fig. 18 [as "Petraea"]. 1868; Potbury, Carnegie Inst. Wash. Publ. 465: 79. 1935.

Synonymy: Petrea borealis Ettingsh., Denkschr. Akad. Wiss. Wien 28: 219 [Foss. Fl. Bilin. 2: 31], pl. 37, fig. 18. 1868.

Bibliography: Ettingsh., Denkschr. Akad. Wiss. Wien 28: 219

[Foss. Fl. Bilin. 2: 31], pl. 37, fig. 18. 1868; Potbury, Carnegie Inst. Wash. Publ. 465: 79. 1935; Mold., Geogr. Distrib. Avicen. 41. 1939; Mold., Prelim. Alph. List Inv. Names 34. 1940; Mold., Alph. List Inv. Names 34. 1942; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 75 & 97 (1942) and ed. 2, 166 & 192. 1949; Mold., Résumé 226, 330, & 464. 1959; Mold., Fifth Summ. 1: 376 (1971) and 2: 595 & 897. 1971.

Illustrations: Ettingsh., Denkschr. Akad. Wiss. Wien 28: pl. 37, fig. 18. 1868; Ettingsh., Foss. Fl. Bilin. 2: pl. 37, fig. 18. 1868.

**PETREA BRACTEATA** Steud., Flora 26: 764 [as "Petraea"]. 1843.

Additional & emended synonymy: Petraea bracteata Steud., Flora 26: 764. 1843. Petrea schomburgkiana Schau., Linnaea 20: 482. 1847. Aegiphila bracteata Steud. ex Mold., Alph. List Cit. 2: 445, sphalm. 1948. Petrea macrophylla Splitgerber ex López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 67, in syn. 1975.

Additional & emended bibliography: Schau., Linnaea 20: 482. 1847; Schau. in A. DC., Prodr. 11: 616—620. 1847; Buek, Gen. Spec. Syn. Candoll. 3: 338. 1858; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 478. 1894; H. H. Rusby, Mem. Torrey Bot. Club 6: 106. 1896; M. Kunz, Anatom. Untersuch. Verb. 64. 1911; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 478. 1946; Mold., Alph. List Cit. 2: 445. 1948; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 478. 1960; Mold., Phytologia 7: 434—435. 1961; Mold. in Menninger, Flow. Vines 338. 1970; Mold., Fifth Summ. 1: 126, 130, 132, 134, & 169 (1971) and 2: 595—598, 792, & 897. 1971; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 66—67. 1975; Mold., Phytologia 31: 406. 1975; López-Palacios, Fl. Venez. Verb. 452—454, 468—471, & 650—653, fig. 110. 1977.

Additional illustrations: López-Palacios, Fl. Venez. Verb. [469], fig. 110. 1977.

Recent collectors have encountered this species on riverbanks, along roadsides, in secondary swamp forests and periodically inundated forests (varzea) and in low forests on non-inundated land (terra firme), at 50—140 m. altitudes, flowering in January, April to September, and November, fruiting in April and May. They describe the plant as a climbing woody vine, liana, or bush-rope, often hanging over water, 4—10 m. long, the bark light-brown, the young leaves purplish-green, the "bracts single, basal, green" or blue, the inflorescences pendent, blue or dark-violet, their stems purple, the flowers soon falling, and the calyx blue or pale-blue to dark purplish-blue or violet, often the tube deep-violet and the limb violet. The corollas are said to have been "blue" on Mori & al. 8160, Prance & al. 3302 & 11454, Schulz 10330, and Silva & al. AS.240, "pale-blue" on Atkinson 4, "dark-blue" on Prance & al. 14620, "bluish" on Maguire & al. 56613, "purple" on Tutin 110, "lilac" on Ramsammy 23, and "violet" on Donselaar 3217, Ducke 872, Halle 516 & 585, and Irwin & al. 54511.

Schulz speaks of this plant as a "liana on thick branches at base

of crown of big 'rode sali' tree, locally very common" in Surinam. Irwin and his associates also found it "common in trees" in that country. Maguire and his associates report it "frequent" in Rondônia, Brazil, and Tutin says of it "common on banks of creeks" in Guyana. Hallé describes it as a "liane a superbe grappes pendentes". A wood sample accompanies Donselaar 3217. The vernacular name, "sandpaper vine", is reported from Guyana.

The type of *P. candelleana* (presently tentatively regarded as a synonym of *P. bracteata*) was photographed by Macbride at Geneva as his type photograph number 7875 and that of *P. schomburgkiana* at Berlin as his type photograph number 17574. I am still not convinced that these two taxa are really exactly the same a *P. bracteata* -- more careful field and herbarium study is called for here. It is worth noting here that the name, *P. schomburgkiana*, regardless of what is said by Jackson (1894), was first published by Schauer in Linnaea, vol. 20, in August 1847 — considerably before it appeared in DeCandolle's Prodromus, volume 11, on November 26, 1847.

López-Palacios (1975) says of *P. bracteata*: "Es posible que tambien lleve a encontrarse en la Amazonia o en la Orinoquia colombiana". He also comments that "Los ejemplares del Amazonas son de hojas muy grandes y hacen honor al nombre de *Petrea macrophylla*, dado a la especie por Splitgerber". He cites (1977) from Venezuela the following collections: Amazonas: Cardona 1444, Level 5, Maguire, Cowan, & Wurdack 30444, Wurdack & Adderley 43583. Miranda: Steyermak & Carreño 106953. Concerning the last of these he notes "Ejemplar dudososo, que puede pertenecer a *P. kohautiana* Presl".

Material of *P. bracteata* has been misidentified and distributed in some herbaria as *P. aspera* Turcz. On the other hand, the Steyermak & Espinoza 106953, distributed as *P. bracteata*, actually is *P. kohautiana* Presl (as suspected by López-Palacios, above), while Ducke 872 & 1133 and Frées 22628 are *P. martiana* Schau.

Additional & emended citations: VENEZUELA: Amazonas: Cardona 1444 (Ve). GUYANA: Appun s.n. (Pd); Atkinson 4 (Mi); E. H. Graham 254 (W-1444092); A. S. Hitchcock 17249 (W-1056369); Jenman 5125 (W-1323179), 5456 (W-58250, W-1323178); Lang & Persaud 87 (F-559014); Ramsammy 19 (W-2212562), 23 (W-2212565); M. R. Schomburgk 108 [Macbride photos 17574] (F-663053--photo, N--photo, W--photo), 173 (F-876664); A. C. Smith 2626 (F-1023803); Tutin 110 (W-1743410). GUYANAN ISLANDS: Moorie: Mori, Bolten, Persaud, Boyan, Roberts, Jugernauth, & Dwarka 8160 (N). SURINAM: Cowan & Lindeman 39221 (B); Donselaar 3217 (Oa, Oa); Fairchild s.n. [March 3, 1932] (W-1626075); Hostmann & Kappler 39 [Macbride photos 22776] (E-118718— isotype, F-687345--photo of isotype, F-976304--photo of isotype); Irwin, Prance, Soderstrom, & Holmgren 54511 (N); J. P. Schulz 10330 (W-2691317). FRENCH GUIANA: Hallé 516 (N, P); 585 (P); Wachenheim 5 (F-540793, W-1185297). BRAZIL:

Amazônas: Ducke 872 (W--2592937); Prance, Maas, Atchley, Steward, Woolcott, Coêlho, Monteiro, Pinheiro, & Ramos 14620 (Ld, N); Prance, Pena, & Ramos 3302 (Ld, N); Prance, Ramos, Steward, & Pinheiro 11454 (Ld, N). Pará: Campbell, Ongley, Ramos, Monteiro, & Nelson P.22570 (Ld, N); Murça Pires 3622 (W--2222488); Silva, Prance, Balick, Berg, Henderson, Nelson, Bahia, & Reis dos Santos AS.240 (N). Rondônia: Maguire, Murça Pires, Maguire, & Silva 56613 (Ld, N). LOCALITY OF COLLECTION UNDETERMINED: Herb. De Candolle s.n. [Macbride photos 7875] (F--645723--photo, N--photo, W--photo).

**PETREA BREVICALYX** Ducke, Bull. Mus. Hist. Nat. Paris, ser. 2, 4: 748--749 [as "Petraea"]. 1932; J. A. Clark, Card-Ind. Gen. Sp. & Var. Pl. 1933.

Additional synonymy: Petraea brevicalyx Ducke, Bull. Mus. Hist. Nat. Paris, ser. 2, 4: 748. 1932. Petraca kuhlmannii Mold. ex F. C. Hoehne, Resen. Hist. Secc. Bot. Agron. Inst. Biol. S. Paulo 153, sphalm. & hyponym. April 1937.

Additional bibliography: Fedde & Schust., Justs Bot. Jahresber. 60 (2): 574. 1941; Mold., Phytologia 7: 435--436. 1961; Mold., Fifth Summ. 1: 169 (1971) and 2: 595, 596, 598, 788, & 897. 1971.

Prance and his associates refer to this plant as a liana, the inflorescence, calyx, and corolla blue, and found it growing in a forest beside a small stream, flowering in January.

Additional & emended citations: BRAZIL: Amazônas: Ducke 140 (F--901758, W--1693149, W--1875310), s.n. [Herb. Rio Jan. 22544] (W--1518519--cotype); Frôes 20501 (W--2439285); Prance, Pena, & Ramos 3912 (Ld, N, S).

**PETREA COLOMBIANA** Mold., Feddes Repert. Spec. Nov. 43: 174--176. 1938.

Additional bibliography: Mold., Phytologia 7: 436. 1961; Mold., Fifth Summ. 1: 119 & 366 (1971) and 2: 897. 1971.

López-Palacios describes this plant as an "arbolito de unos 3 m., flores azulvioláceas" and encountered it at 1600 m. altitude, flowering in August.

Additional & emended citations: COLOMBIA: Magdalena: Seifritz 123 (W--1572424). Santander: López-Palacios 3620 (N, Z); López R. s.n. [Bucaramango, 12/19/1918] (Ar--1782, Ar--1782a). CULTIVATED: Colombia: Killip & Smith 19067 (W--1354374--isotype).

**PETREA DUCKEI** Mold., Phytologia 1: 469--470. 1940.

Synonymy: Petraea duckei Mold., in herb.

Additional bibliography: Mold., Phytologia 7: 436--437. 1961; Mold., Fifth Summ. 1: 169 (1971) and 2: 897. 1971.

Additional citations: BRAZIL: Amapá: Frôes 25774 (W--2248456).

**PETREA FRAGRANTISSIMA** Rusby, Mem. N. Y. Bot. Gard. 7: 338. 1927.

Synonymy: Petraea fragrantissima Rusby ex Mold., Feddes Repert.

Spec. Nov. 43: 190, in syn. 1938.

Bibliography: Rusby, Mem. N. Y. Bot. Gard. 7: 338. 1927; A. W. Hill, Ind. Kew. Suppl. 8: 178. 1929; Mold., Feddes Repert. Spec. Nov. 43: 190—191. 1938; Mold., Geogr. Distrib. Avicen. 28. 1939; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 40 & 97 (1942) and ed. 2, 97: 192. 1949; R. C. Foster, Contrib. Gray Herb. 184: 170. 1958; Mold., Résumé 114, 331, & 464. 1959; Mold., Fifth Summ. 1: 183 (1971) and 2: 595 & 898. 1971; Troncoso, Darwiniana 18: 366, 367, & 411. 1974.

**PETREA GLANDULOSA** Pittier, Bol. Cienc. Tecn. Mus. Com. Venez. 1: 70 [as "Petraea"]. 1925; Hill, Ind. Kew. Suppl. 7: 183. 1929.

Synonymy: Petrea glandulosa Pittier, Bol. Cienc. Tecn. Mus. Com. Venez. 1: 70. 1925. Petrea pubescens f. albicalyx Mold., Phytologia 18: 72. 1969.

Additional bibliography: J. A. Clark, Card-Ind. Gen. Sp. Var. Pl. issue 116. 1926; Fedde & Schust., Justs Bot. Jahresber. 58 (2): 329. 1938; Pittier, Supl. Pl. Usual. Venez. 55. 1939; Mold., Phytologia 7: 437. 1961; Mold., Résumé Suppl. 17: 347. 1968; Annon., Biol. Abstr. 50 (12): B.A.S.I.C. S.154. 1969; Mold., Biol. Abstr. 50: 6338. 1969; Mold., Phytologia 18: 72. 1969; Hocking, Excerpt. Bot. A.15: 422. 1970; Lasser, Act. Bot. Venez. 4: 48. 1970; Oberwinkler, Pterid. & Sperm. Venez. 78. 1970; Mold., Fifth Summ. 1: 126 (1971) and 2: 596 & 898. 1971; Mold., Phytologia 25: 228, 234, & 242. 1973; Lasser, Braun, & Steyermark, Act. Bot. Venez. 9: 36. 1974; López-Palacios, Revist. Fac. Farm. Univ. Andes 14: 22. 1974; Mold., Phytologia 28: 436. 1974; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 66—67. 1975; López-Palacios, Fl. Venez. Verb. 453, 454, [469], 472—476, 480, & 652, fig. 111. 1977.

Illustrations: López-Palacios, Fl. Venez. Verb. [473], fig. 111. 1977.

López-Palacios (1975) comments that "Bernardi 1224, por la zona de colección y por su forma parece pertenecer a esta taxón, y creo que el Dr. Moldenke lo haya colocado aquí. Sin embargo, el rótula dice: 'Floración muy vistosa por sus cálices corolinos violados'. Puede ser una equivocación y tratarse de cálices 'blancos con tintes violados'. Aunque mi opinión es que se trata de una P. glandulosa, la he conservado en P. pubescens en atención a la nota citada. De ser ésta última sería, la más baja (300 m) y la más oriental de los Andes venezolanos. Tengo una vaga idea de que el Dr. Moldenke la haya citado, como de Mérida, pero es de Barinas; también pertenece aquí Aristeguieta 4113."

Recent collectors describe P. glandulosa as a tree, 6—15 m. tall, unarmed, erect, and handsome, the trunk elongate, cylindric, erect, 10—12 cm. in diameter, the crown more or less narrow and open, the leaves very asperous, elliptic, to 27 cm. long and 12 cm. wide, and the calyx white and glandulose. They have found it growing in areas disturbed by cultivation, at 200—850 m. altitude, flowering from December to February, April, and September. Lasser reports it cultivated in Venezuela. López-Palacios speaks of the

calyx as "blanco al principio, luego amarillento verdoso" and the corolla as "blanca lila al principio, virando paulatinamente hacia al morado intenso". On Aristeguieta 1602 the label informs us that the "flores blancas, con el centro debilmente moradas, muy ornamentales". The corollas are said to have been "pale-blue" on Bunting 2369 and "pale-purple" on Aristeguieta 3864 and López-Palacios 2664.

Vernacular names reported for this species are "guamo macho", "palo santo", "penitente", "tostadito", and "totumito".

Material of P. glandulosa has been misidentified and distributed in some herbaria as P. aspera Turcz. and P. pubescens Turcz. In fact, the Aristeguieta 3864 and the Aristeguieta & Agostini 4113, cited below, were previously erroneously cited by me as P. pubescens.

López-Palacios (1977) cites the following collections from Venezuela: Barinas: Aristeguieta 1602, 3854; Bernardi 1224, 3331, 6520; Ruiz-Terán 1331, 1504. Federal District: Aristeguieta 6600; López-Palacios 2553. Portuguesa: López-Palacios 2664; Peraza s.n. [Pittier 11532]. Táchira: Aristeguieta 4113; Bunting 2369; L. Cárdenas 1276; López-Palacios 2757; López-Palacios & Bautista 3238; Ruiz-Terán 3561. Trujillo: Ruiz-Terán & López-Palacios 10421.

Additional & emended citations: VENEZUELA: Barinas: Aristeguieta 1602 (N), 3864 (N); Bernardi 1224 (N). Portuguesa: López-Palacios 2664 (N, Z); Peraza s.n. [Pittier 11532] (W--1197958--isotype). Táchira: Aristeguieta & Agostini 4113 (Ac); López-Palacios & Bautista 3238 (Ld). Trujillo: Ruiz-Terán & López-Palacios 10421 (Ld). CULTIVATED: Venezuela: Bunting 2369 (Ld, Z).

**PETREA INSIGNIS** Schau. in A. DC., Prodr. 11: 620. 1847.

Additional synonymy: Petraea insignis Schau. ex Mold., Feddes Repert. Sp. Nov. 43: 20, in syn. 1938. Petrea insigis López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 66, sphalm. 1975.

Additional & emended bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 338. 1858; Bocq., Adansonia, ser. 1, 3: [Rev. Verbenac.] 251. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 478. 1894; Peckolt, Bericht. Deutsch. Pharm. Gesell. 14: 478. 1904; M. Kunz, Anat. Untersuch. Verb. 65. 1911; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 478. 1946; LeCointe, Amaz. Bras. III Arv. & Pl. Uteis, ed. 2, 198 & 494. 1947; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 478. 1960; Mold., Phytologia 7: 437. 1961; Mold., Fifth Summ. 1: 169 & 366 (1971) and 2: 596, 598, & 898. 1971; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 64 & 66. 1975; Mold., Phytologia 31: 406. 1975.

Recent collectors refer to this plant as a vine or liana, the calyx blue, and have found it growing along roadsides, on "black-water flooded riverbanks" (varzea), and growing "on submerged trees", flowering in April, October, and November. The corolla is said to have been "blue" on Prance & al. 15117 & P. 25462 and "vio-

let" on Prance & al. 11768. The vernacular names, "flor de São Miguel", "viuvinha", and "touca de viuva" -- the last translated as "Witwenhaube" by Peckolt (1904) -- have been recorded for the species.

Macbride has photographed the type of this taxon in the Munich herbarium as his type photograph number 20348.

Additional & emended citations: BRAZIL: Amazônas: Murça Pires, Cavalcante, Magnago, & Silva s.n. [Herb. IPEAN 13884b] (Ld, N); Prance, Coêlho, Kubitzki, & Steward 11768 (Ld, N); Prance, Maas, Woolcott, Coêlho, Monteiro, & Ramos 15117 (Ld, N); Spruce s.n. [in vicinibus Barra, Dec.-Mart. 1850-51] (F--876692). Pará: Martius s.n. [Pará; Macbride photos 20348] (F--684155--photo of type, Mu--904--type, N--photo of type); Prance, Silva, Balick, Berg, Henderson, Nelson, Bahia, & Reis dos Santos P.25462 (N). MOUNTED ILLUSTRATIONS: Schau. in Mart., Fl. Bras. 9: pl. 46, fig. 2. 1851 (N, Z).

#### PETREA KOHAUTIANA Presl, Bot. Bemerk. 99. 1844.

Additional synonymy: Petraea volubilis Jacq. ex Cham., Linnaea 7: 366. 1832 [not Petraea volubilis Gaertn., 1791, nor Haust., 1966, nor Jack, 1947, nor Jacq., 1938, nor L., 1919, nor Willd., 1838 & 1940, nor Woodr., 1906]. Petrea kohautiana Presl ex Crevost & Pételet, Bull. Econ. Indochin. 37: 1289, in syn. 1934. Petrea kobautiana Presl ex Macbr., Field Mus. Publ. Bot. 13 (5): 663, sphalm. 1960. Petraea kohautiana Presl ex Mold., Résumé Suppl. 13: 7, in syn. 1966. Petrea volbilis Jacq. ex Jiménez, Cat. Fl. Doming. Suppl. 1: 218, sphalm. 1966. Petrea konuatiana Mold. ex López-Palacios, Revist. Fac. Farm. Univ. Andes 18: 71, sphalm. 1976. Petrea kohautiana Mold. ex López-Palacios, Fl. Venez. Verb. [456], fig. 107. 1977.

Additional & emended bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 338. 1858; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 478. 1894; Crevost & Pételet, Bull. Econ. Indochin. 37: 1289. 1934; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 478. 1946; Mold., Phytologia 2: 178-179 (1946) and 2: 501. 1948; Pételet, Pl. Méd. Cambod. Laos Viet-Nam 2 [Archiv. Recherch. Agron. Past. Viet-Nam 18]: 258 (1953) and 4: 145. 1954; Mold., Verb. [Trin. Tob.] 19. 1955; Chittenden, Dict. Gard. 1534. 1956; D. & B. Hargreaves, Trop. Bloss. 31. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 478. 1960; Macbr., Field Mus. Publ. Bot. 13 (5): 663. 1960; Mold., Phytologia 7: 437-438. 1961; Liogier, Rhodora 67: 350. 1965; Jiménez, Cat. Dl. Doming. Suppl. 1: 218. 1966; D'Arcy, Rhodora 69: 439. 1967; Mold., Résumé Suppl. 15: 21. 1967; Uphof, Dict. Econ. Pl., ed. 2, 398. 1968; Corner & Watanabe, Illustr. Guide Trop. Pl. 76. 1969; Esteve, Arb. Ornament. Trop. 355. 1969; Menninger, Flow. Vines 61. 1970; Mold. in Menninger, Flow. Vines 338, pl. 193. 1970; Mold., Fifth Summ. 1: 103, 107, 109, 110, 366, & 390 (1971) and 2: 595, 596, 598, 599, 898, & 968. 1971; Mold., Phytologia 23: 416, 426, & 434. 1972; F. Perry, Flow. World 304 & 318. 1972; Chantry,

Alive 1: 27. 1973; Mold., Phytologia 29: 76 (1974) and 31: 383 & 392. 1975; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 64, 66, & 67 (1975) and 18: 71. 1976; Mold., Phytologia 34: 257. 1976; Lewis & Elvin-Lewis, Med. Bot. 324. 1977; López-Palacios, Fl. Venez. Verb. 454—[456], 471, 638, & 651. 1977; Mold., Phytologia 41: 450. 1979.

Additional illustrations: D. & B. Hargreaves, Trop. Bloss. 31 (in color). 1960; Mold. in Menninger, Flow. Vines pl. 193 (in color). 1970; F. Perry, Flow. World 304 (in color). 1972; López-Palacios, Fl. Venez. Verb. [456], fig. 107. 1977.

Recent collectors describe this plant as a high-climbing woody vine, to 7 m. long, or as an erect branched shrub, 2 m. tall, the leaves very scabrous-asperous above, deep-green, and the calyx lavender or violet. They have encountered it at the edge of forests, on rock walls, along roadsides, and in low windswept woods on headlands, at 50 to 700 m. altitude, flowering from March to July, fruiting in May. The corollas are said to have been "purple" on Gillis 8177, Howard 11303, and Ruiz-Terán & López-Palacios 10871, "blue-purple" on Steyermark & Espinoza 106953, "lavender" on Wasshausen & Ayensu 357 and Webster & al. 9086, and "deep-violet" on Proctor 17943.

Howard reports the species "common" on St. Lucia and Degelius found it "abundant" on Martinique. Vernacular names reported for it are "liane à la veuve", "liane rude", "liane St. Jean", and "liane violette", as well as "queen's wreath". Chittenden (1956) reports it cultivated in England, while Esteva (1969) reports it both cultivated and escaped in Venezuela. Menninger (1970) speaks of it as "among the finest of the Queen's-Wreath climbers".

Uphof (1968), as well as Lewis & Elvin-Lewis (1977) report that a tea is brewed from the flowers of this species and Chiococca alba and that this tea is used as an abortive on Dominica.

Crevost & Pételot (1934) reduce P. kohautiana, along with P. retusa Presl, P. serrata Presl, and P. volubilis Vell., so synonymy under P. subserrata Cham. [now known as P. racemosa Nees].

Material of P. kohautiana has been misidentified and distributed in some herbaria as P. aspera Turcz. and P. bracteata Steud. On the other hand, the López-Palacios 3589, distributed as P. kohautiana, actually is P. arborea H.B.K.

Additional & emended citations: LEEWARD ISLANDS: Antigua: Rose, Fitch, & Russell 3479 (W—639622); Wullschlègel 428 (Mu—921). Dominica: Eggers 576 (Mu—1706), s.n. [Wallhouse, Oct. 1881] (W—1323171); Gillis 8177 (Ft—9520); Wasshausen & Ayensu 357 [wood 36929] (W—2536353). Guadeloupe: Duss 2390 (W—849818); Herb. Short s.n. (D—611740); Stehlé & Stehlé 6967 (W—2453655); Webster, Ellis, & Miller 9086 (Mi). Marie Galante: Proctor 20980 (W—2613803). WINDWARD ISLANDS: Grenada: W. E. Broadway s.n. [Presberty, June 6, 1906] (F—192600). Martinique: Degelius s.n. [22/V/¢958] (Go); Duss 1979 (F—20541); Hahn 270 (D—618885, Mu—1422,

W—58254); Kohaut s.n. [Sieber Fl. Mart. 157 in part] (Mu—920—isotype); H. Stehlé 5754 (Mi); Stehlé & Stehlé 6890 (W—2453661), 6921 (W—2453656). St. Lucia: Herb. Schreber s.n. (Mu—919); Herb. Schwägrichen s.n. (Mu—1421); R. A. Howard 11303 (N); Proctor 17943 (W—2585076). VENEZUELA: Aragua: Overwinkler & Oberwinkler 14704 (Mu). Miranda: Steyermark & Espinoza 106953 (W—2747231). CULTIVATED: Guyana: Warren s.n. [1924] (W—1280088). St. Croix: L. A. Ricksecker 239 (E—118722, F—71050). Venezuela: Ruiz-Terán & López-Palacios 10871 (Z).

**PETREA KOHAUTIANA f. ALBA** (Freeman & Williams) Mold., Phytologia 41: 450. 1979.

Additional synonymy: Petrea volubilis "white variety" Cove, Gard. Chron., ser. 3, 39: 25, fig. 15. 1906. Petrea kohautiana var. alba (Freeman & Williams) Mold., Phytologia 2: 108, nom. nud. (1945); 2: 179. 1946. Petrea kohautiana var. anomolo Chittenden, Dict. Gard. 1534. 1956. Petrea volubilis var. white-flowered MacM., Prop. Plant. Gard., ed. 5, 122. 1962. Petrea volubilis var. albiflora López-Palacios, in herb.

Additional bibliography: Cove, Gard. Chron., ser. 3, 39: 25, fig. 15. 1906; R. W. R. Mill., Gard. Book Barbados 87 & vii. 1935; Mold., Phytologia 2: 108. 1945; Mold., Verb. [Trin. Tob.] 19. 1955; Chittenden, Dict. Gard. 1534. 1956; D. & B. Hargreaves, Trop. Bloss. 31. 1960; Mold., Phytologia 7: 438. 1961; MacM., Trop. Plant. Gard., ed. 5, 122. 1962; Mold. in Menninger, Flow. Vines 338. 1970; Mold., Fifth Summ. 1: 366 (1971) and 2: 595, 598, 599, & 898. 1971; Mold., Phytologia 23: 426 & 434 (1972) and 31: 392. 1975; López-Palacios, Fl. Venez. Verb. 455 & 651. 1977; Mold., Phytologia 41: 450. 1979.

Illustrations: Cove, Gard. Chron., ser. 3, 39: 25, fig. 15. 1906; D. & B. Hargreaves, Trop. Bloss. 31 (in color). 1960.

Ruiz-Terán & López-Palacios refer to this plant as an "arbusto muy ramificado, 1.8 m. alto" and have encountered it in cultivation in Venezuela at 50 m. altitude, flowering in July. Cove (1906) reports the form cultivated in the Barbados islands. It is known commonly as "white petrea" or "white-wreath". It was originally described [as var. anomala Mold.] as having both white calyx and white corolla and is so pictured by Hargreaves (1960). It is most probable that not only the "P. volubilis white variety" of Cove (1906), but also the "P. volubilis var. white-flowered" of MacMillan (1962) and the P. volubilis var. alba of Miller (1935) actually are the taxon under discussion here and not the true P. volubilis f. albiflora (Standl.) Standl.

Additional citations: CULTIVATED: Venezuela: Ruiz-Terán & López-Palacios 10870 (Z). MOUNTED ILLUSTRATIONS: H. N. Moldenke color slide 303 (Ld).

**PETREA KOAUTIANA** var. **PILOSULA** Mold., Phytologia 29: 76. 1974.

Bibliography: Mold., Phytologia 29: 76 (1974) and 31: 392.

1975.

This variety differs from the typical form of the species in having its leaf-blades normally very distinctly rounded-emarginate apically, sometimes with the 2 lobe-like portions of the blade apex cordately overlapping, and with a sharp and firm, projecting, erect or divergent arista about 3 mm. long arising from the termination of the midrib and with the calyx and receptacle sparsely or densely whitish-pilosulous throughout.

Ruiz-Terán & López-Palacios describe the plant as an "arbusto erecto, 2 m., cultivado como ornamental, flores moradas" and collected it in anthesis in September, distributing their material as P. aspera Turcz. They record the vernacular name, "viuda".

Citations: CULTIVATED: Venezuela: Ruiz-Terán & López-Palacios 7641 (Z-type).

**PETREA LONGIFOLIA** Mold., Feddes Repert. Spec. Nov. 43: 197-199. 1938.

Additional bibliography: Macbr., Field Mus. Publ. Bot. 13 (5): 665. 1960; Mold., Phytologia 7: 439. 1961; Mold., Fifth Summ. 1: 375 (1971) and 2: 596 & 898. 1971.

Emended citations: LOCALITY OF COLLECTION UNDETERMINED: Herb. Mus. Paris s.n. (F-976499--isotype).

**PETREA MACROSTACHYA** Benth., Ann. Nat. Hist., ser. 1, 2: 448 [as "Petraea"]. 1839; Schau. in A. DC., Prodr. 11: 617. 1847.

Additional & emended synonymy: Petraea (volubilis?) guianensis Kunth ex Cham., Linnaea 7: 367. 1832. Petraea macrostachya Benth., Ann. Nat. Hist., ser. 1, 2: 448. 1839. Petraea (volubilis?) guianensis Cham. apud Mold., Feddes Repert. Spec. Nov. 43: 204, in syn. 1938. Petrea maritima Schau. ex Mold., Résumé Suppl. 12: 12, in syn. 1965.

Additional & emended bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 338. 1858; Turcz., Bull. Soc. Imp. Nat. Mosc. 36 (2): 211. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 478. 1894; M. Kunz, Anatom. Versuch. Verb. 65. 1911; Mold., Phytologia 2: 108. 1945; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 478 (1946) and imp. 3, 2: 478. 1960; Macbr., Field Mus. Publ. Bot. 13 (5): 663 & 664. 1960; Mold., Phytologia 7: 439. 1961; Mold., Résumé Suppl. 12: 12. 1965; Mold. in Menninger, Flow. Vines 338. 1970; Mold., Fifth Summ. 1: 130, 134, 142, & 169 (1971) and 2: 596-599 & 898. 1971; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 66 & 67. 1975; Soukup, Biota 11: 14. 1976.

Recent collectors describe this plant as a woody vine or liana, climbing into trees, the inflorescences pendent, the calyx blue or blue-lilac to lavender, and the stamens purple. They have encountered it in low forests near fields, in partially inundated and in true varzea forests, in secondary forests, and in terra firme forests, flowering in February, June, August, and September, fruiting

in September. Macbride (1960) records it from Loreto, Peru, but cites no substantiating specimens. The corollas are said to have been "blue" on Bisby & al. P.18063, "blue, interior of tube cream" on Prance & al. 2585, "blue-lilac" on Prance & al. 5236, "lavender" on Bolten & al. 8136, "violet" on Ducke 1982 and Hallé 747, "purple" on Lleras & al. P.17213 and Prance & al. 10236, and "roxa" on Ribeiro 15287. In situ photographs accompany Mori & al. 8136.

Material of this species has been misidentified and distributed in some herbaria as P. martiana Schau. On the other hand, the Mathias & Taylor 5093, distributed as P. macrostachya, actually is P. martiana var. glabrescens Mold.

Additional & emended citations: GUYANA: Jenman 4905 (W-58249); M. R. Schomburgk 158 [Macbride photos 34292] (F-976312--photo of isotype); A. C. Smith 3401 (F--1023581). GUYANAN ISLANDS: Thomas: Mori, Bolten, Persaud, Boyan, Roberts, Jugernauth, & Dwarka 8136 (N). FRENCH GUIANA: Collector undetermined s.n. (Pd); Hallé 747 (N, P). BRAZIL: Amapá: Irwin, Egler, & Murça Pires 47158 (N). Amazonas: Bisby, Steward, & Ramos P.18063 (N); Ducke 1982 (W-1901377, W-1901407); Lanna 338 [Castellanos 23658; Herb. Cent. Pesq. Florest. 1971] (Z); Lleras, Steward, Ongley, Coêlho, Ramos & Lima P.17213 (N); Prance, Pena, Ramos, & Videcki 2585 (Ld, N, S); Prance, Steward, Ramos, & Farias 10236 (Ld, N); Ribeiro 15287 [714] (Ld). Rondônia: Prance, Philcox, Forero, Coêlho, Ramos, & Farias 5236 (Ac, N).

**PETREA MARTIANA** Schau. in A. DC., Prodr. 11: 620. 1847.

Additional & emended bibliography: Buek, Gen. Spec. Syn. Candoll. 3: 338. 1858; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 478. 1894; M. Kunz, Anatom. Untersuch. Verb. 65. 1911; LeCointe, Amaz. Bras. III Arv. Pl. Uteis, ed. 1, 470. 1934; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 2: 478. 1946; LeCointe, Amaz. Bras. III Arv. Pl. Uteis, ed. 2, 495. 1947; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 2: 478. 1960; Macbr., Field Mus. Publ. Bot. 13 (5): 663-666. 1960; Mold., Phytologia 7: 439-440. 1961; Mold., Fifth Summ. 1: 142, 169, & 381 (1971) and 2: 596, 598, 599, & 898. 1971; López-Palacios, Revist. Fac. Farm. Univ. Andes 15: 67. 1975; Mold., Phytologia 32: 458 (1975) and 34: 257 & 259. 1976; Hocking, Excerpt. Bot. A.28: 259. 1976; Soukup, Biota 11: 14. 1976; López-Palacios, Fl. Venez. Verb. 468 & 652. 1977.

Recent collectors describe this plant as a liana, to "over 10 m. tall in trees", the pedicels and calyx blue, and have encountered it in forests and forest edges, on terra firme, and on low land at the borders of rivers of whitish water, flowering in February and from October to December. LeCointe (1947) reports that it is found "Na mata de terra firme argilosa. E' a especie mais frequente no Estado do Pará, [Brazil]". The corollas are said to have been "blue" on Prance & al. 3793 & 8256 and "violet" on Ducke 872 & 1133 and Frées 22628.

[to be continued]